Claims

1. A single-step simple and economical process for the preparation of nanosized acicular magnetic iron oxide particles of maghemite phase of size ranging between 300-350 nm in magnetic field at room temperature by biomimetic route, said process comprising steps of:
   a) mixing polyvinyl alcohol solution of strength ranging between 0.1 to 0.6 % and iron salt solution of strength ranging between 0.1-0.15 % in a volumetric ratio ranging between 3.1 to 5:2 at a pH in the range of 2-5 and stirring for about 20 minutes by a magnetic stirrer,
   b) heating the resultant solution at a temperature in the range of 30°-60°C for about 24 hours in an oven under nitrogen atmosphere to obtain an iron ion loaded polymer gel,
   c) soaking the above said polymer gel for a period ranging from 4-6 minutes into sodium hydroxide solution of strength ranging between 2-2.5 M at a temperature ranging from 30°C-50°C under an external magnetic field ranging between 800-1500 Gauss,
   d) washing the above soaked polymer gel with deionized water to remove the sodium chloride salt and drying at a temperature ranging between 30°C-60°C under nitrogen atmosphere for about 24 hours, and
   e) recovering the 100% acicular maghemite particles from the dried polymer gel by known method
2. A process as claimed in claim 1, wherein the iron salt solution is prepared by dissolving ferric chloride and ferrous chloride salts in the ratio of 2:1 to 4:3 in deionized water.
3. A process as claimed in claim 1, wherein the polyvinyl alcohol is of strength preferably about 0.5%.
4. A process as claimed in claim 1, wherein the volumetric ratio of alcohol and iron salt solution is preferably 4:1.
5. A process as claimed in claim 1, wherein the pH is preferably about 3.
6. A process as claimed in claim 1, wherein the solution is heated at temperature preferably about 40^0C.

7. A process as claimed in claim 1, wherein the sodium hydroxide is of strength preferably about 2.05M.

8. A process as claimed in claim 1, wherein the particles are free of agglomeration.

9. A process as claimed in claim 1, wherein particles are high aspect maghemite particles.

10. A process as claimed in claim 1, wherein the particles have high particle density/unit area.

11. A method of obtaining a magnetic memory storage device using nanosized acicular magnetic iron oxide particles of maghemite phase, said method comprising step of covering a flexible disk with a thin layer of the said iron oxide, casing the covered-disk with a protective material, and obtaining the magnetic memory storage device.

12. A method as claimed in claim 11, wherein the protective material is plastic.